# RUI-YANG JU

✉ Email  |  🏠 Homepage  |  ⌂ GitHub  |  G Google Scholar  |  Ⓓ ORCID  |  in LinkedIn  |  📍 Taipei City, Taiwan

## EDUCATION

**National Taiwan University** *Taipei City, Taiwan*
**MASTER OF SCIENCE (M.S.)** In Graduate Institute of Networking and Multimedia 2023.09 – 2025.06
- Average Score: **90.10/100**, GPA: **4.03/4.3**
- Advisor: Prof. **Yi-Ping Hung**

**Tamkang University** *New Taipei City, Taiwan*
**BACHELOR OF ENGINEERING (B.E.)** In Electrical and Computer Engineering 2019.09 – 2023.06
- Average Score: **94.50/100**, GPA: **4.0/4.0**, Overall Department Ranking: **1st/68**
- Advisor: Prof. **Jen-Shiun Chiang**

## EXCHANGE EXPERIENCES

**University of Cambridge** *Cambridge, United Kingdom*
**Online Course:** An Introduction to AI Ethics and Society 2021.06 – 2021.07
**Fudan University** *Shanghai, China*
**FIST Course:** Scientific Methodology and Scientific Paper Writing 2019.09 – 2019.09
**Peking University** *Beijing, China*
**Summer Course:** Video Editing 2019.08 – 2019.08

## RESEARCH INTERESTS

My primary research interests include Deep Learning (DL), Neural Networks (NN), Computer Vision (CV), and Image Processing (IP). In addition, I have contributed to some projects in other fields, such as Natural Language Processing (NLP), and Speech & Audio. My completed and current research focuses on the following topics:

**[R4] 3D Facial Expression Reconstruction**: Computer Graphics, 3D Computer Vision, 3D Morphable Model, 3D Face Reconstruction, 3D Face Animation.
**[R3] Color Degraded Document Image Binarization**: Image Generation, Image Enhancement, Image Binarization, Generative Adversarial Network, Discrete Wavelet Transform.
**[R2] Fracture Detection on Pediatric Wrist Trauma X-ray Images**: Medical Image Processing, Medical Imaging Diagnostics, Object Detection, Fracture Detection, You Only Look Once, Attention Mechanism.
**[R1] Layer and Block Connection Strategy**: Image Recognition, Image Classification, Image Super-Resolution, Convolutional Neural Network, Transformer, Network Architecture Design, Residual Learning.

## PUBLICATIONS

### Journal Papers

**[J6]** Rui-Yang Ju, Yu-Shian Lin, Yanlin Jin, Chih-Chia Chen, Chun-Tse Chien, Jen-Shiun Chiang, **"Three-stage Binarization of Color Document Images Based on Discrete Wavelet Transform and Generative Adversarial Networks"**, *Knowledge-Based Systems*, 2024. **(IF 7.2)** [arXiv] [Published] [GitHub]

**[J5]** Chun-Tse Chien, Rui-Yang Ju, Kuang-Yi Chou, Jen-Shiun Chiang, **"YOLOv9 for Fracture Detection in Pediatric Wrist Trauma X-ray Images"**, *Electronics Letters*, 2024. **(IF 0.7)** [arXiv] [Published] [GitHub]

**[J4]** Rui-Yang Ju, Weiming Cai, **"Fracture Detection in Pediatric Wrist Trauma X-ray Images Using YOLOv8 Algorithm"**, *Scientific Reports*, 2023. **(IF 3.8)** [arXiv] [Published] [GitHub]

**[J3]** Rui-Yang Ju*, Chih-Chia Chen*, Jen-Shiun Chiang, Yu-Shian Lin, Wei-Han Chen (*=equal contribution), **"Resolution Enhancement Processing on Low Quality Images Using Swin Transformer Based on Interval Dense Connection Strategy"**, *Multimedia Tools and Applications (MTA)*, 2023. **(IF 3.0)** [arXiv] [Published] [GitHub]

**[J2]** Rui-Yang Ju, Ting-Yu Lin, Jia-Hao Jian, Jen-Shiun Chiang, **"Efficient Convolutional Neural Networks on Raspberry Pi for Image Classification"**, *Journal of Real-Time Image Processing (JRTIP)*, 2023. **(IF 2.9)** [arXiv] [Published] [GitHub]

**[J1]** Rui-Yang Ju, Ting-Yu Lin, Jia-Hao Jian, Jen-Shiun Chiang, Wei-Bin Yang, **"ThreshNet: An Efficient DenseNet Using Threshold Mechanism to Reduce Connections"**, *IEEE Access*, 2022. **(IF 3.9)** [arXiv] [Published] [GitHub]

### Conference Papers

**[C8]** Rui-Yang Ju, Chun-Tse Chien, Chia-Min Lin, Jen-Shiun Chiang, **"Global Context Modeling in YOLOv8 for Pediatric Wrist Fracture Detection"**, *International Symposium on Intelligent Signal Processing and Communication Systems* (ISPACS), Kaohsiung, Taiwan, 2024. [arXiv] [GitHub]

**[C7]** Yanbing Bai, Siao Li, Rui-Yang Ju, Zihao Yang, Jinze Yu, Jen-Shiun Chiang, **"FAD-SAR: A Novel Fishing Activity Detection System via Synthetic Aperture Radar Images Based on Deep Learning Method"**, *International Symposium on Intelligent Signal Processing and Communication Systems* (ISPACS), Kaohsiung, Taiwan, 2024. [arXiv]

**[C6]** Rui-Yang Ju, Chun-Tse Chien, Jen-Shiun Chiang, **"YOLOv8-ResCBAM: YOLOv8 Based on An Effective Attention Module for Pediatric Wrist Fracture Detection"**, *International Conference on Neural Information Processing* (*ICONIP*), Auckland, New Zealand, 2024. [arXiv] [GitHub]

**[C5]** Rui-Yang Ju, Yu-Shian Lin, Jen-Shiun Chiang, Chih-Chia Chen, Wei-Han Chen, Chun-Tse Chien, **"CCDWT-GAN: Generative Adversarial Networks Based on Color Channel Using Discrete Wavelet Transform for Document Image Binarization"**, *Pacific Rim International Conferences on Artificial Intelligence* (*PRICAI*), Jakarta, Indonesia, 2023. [arXiv] [Published] [GitHub]

**[C4]** Rui-Yang Ju, Jen-Shiun Chiang, Chih-Chia Chen, Yu-Shian Lin, **"Connection Reduction of DenseNet for Image Recognition"**, *International Symposium on Intelligent Signal Processing and Communication Systems* (*ISPACS*), Penang, Malaysia, 2022. [arXiv] [Published] [GitHub]

**[C3]** Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, **"TripleNet: A Low-Parameter Network for Low Computing Power Platform"**, *IET International Conference on Engineering Technologies and Applications* (*IET-ICETA*), Changhua, Taiwan, 2022. [arXiv] [Published] [GitHub]

**[C2]** Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, Jia-Hao Jian, Yu-Shian Lin, Liu-Rui-Yi Huang, **"Aggregated Pyramid Vision Transformer: Split-transform-merge Strategy for Image Recognition without Convolutions"**, *IEEE International Conference on Consumer Electronics - Taiwan* (*ICCE-TW*), Taipei, Taiwan, 2022. [arXiv] [Published]

**[C1]** Rui-Yang Ju, Ting-Yu Lin, Jen-Shiun Chiang, **"New Pruning Method Based on DenseNet Network for Image Classification"**, *International Conference on Technologies and Applications of Artificial Intelligence* (*TAAI*), Taichung, Taiwan, 2021. [arXiv] [Published]

## arXiv Preprint Papers

**[A5]** Rui-Yang Ju, Chun-Tse Chien, Enkaer Xieerke, Jen-Shiun Chiang, **"Pediatric Wrist Fracture Detection Using Feature Context Excitation Modules in X-ray Images"**, *arXiv preprint*, 2024. [arXiv] [GitHub]

**[A4]** Yanlin Jin, Rui-Yang Ju, Haojun Liu, Yuzhong Zhong, **"ORB-SfMLearner: ORB-Guided Self-supervised Visual Odometry with Selective Online Adaptation"**, *arXiv preprint*, 2024. [arXiv] [Webpage]

**[A3]** Rui-Yang Ju, KokSheik Wong, Jen-Shiun Chiang, **"Efficient GANs for Document Image Binarization Based on DWT and Normalization"**, *arXiv preprint*, 2024. [arXiv] [GitHub]

**[A2]** Chun-Tse Chien, Rui-Yang Ju, Kuang-Yi Chou, Enkaer Xieerke, Jen-Shiun Chiang, **"YOLOv8-AM: YOLOv8 Based on Effective Attention Mechanisms for Pediatric Wrist Fracture Detection"**, *arXiv preprint*, 2024. [arXiv] [GitHub]

**[A1]** Yanbing Bai, Zihao Yang, Jinze Yu, Rui-Yang Ju, Bin Yang, Erick Mas, Shunichi Koshimura, **"Flood Data Analysis on SpaceNet 8 Using Apache Sedona"**, *arXiv preprint*, 2024. [arXiv]

## PATENTS

**[P2]** Rui-Yang Ju, **"Dust-sucking loading device"**, TW Patent, M595589U, 2020.05. [Google Patents]

**[P1]** Rui-Yang Ju, **"Cigarette box capable of keeping cigarette butts"**, TW Patent, M576794U, 2019.04. [Google Patents]

## SCHOLARSHIPS

**[S12]** Mainland China Student Scholarship, National Taiwan University, 2024.11, TWD9,000.

**[S11]** Mainland China Student Scholarship, National Taiwan University, 2024.05, TWD8,000.

**[S10]** Mainland China Student Scholarship, Sino International Business Innovation Association, 2024.05, USD600.

**[S9]** Master Research Scholarship, National Taiwan University, 2024.02, TWD36,000.

**[S8]** Mainland China Student Scholarship, National Taiwan University, 2023.11, TWD8,000.

**[S7]** Excellent Performance Scholarship, Tamkang University, 2022.12, TWD10,000.

**[S6]** Mainland China Student Scholarship, Sino International Business Innovation Association, 2022.03, USD200.

**[S5]** Excellent Performance Scholarship, Tamkang University, 2021.05, TWD10,000.

**[S4]** Mainland China Student Scholarship, Sino International Business Innovation Association, 2021.03, USD100.

**[S3]** Excellent Performance Scholarship, Feng Chia University, 2019.11, TWD8,000.

**[S2]** Mainland China Student Scholarship, Feng Chia University, 2019.08, TWD58,000.

**[S1]** Excellent Performance Scholarship, Feng Chia University, 2019.03, TWD8,000.

## HONORS AND AWARDS

### Academic Competitions

**[AC4]** Silver Medal (**Top 4%**), Google Universal Image Embedding Challenge, ECCV 2022 Competition, 2022.10.

**[AC3]** Excellent Academic Performance Award, Tamkang University, 2022.05.

**[AC2]** The Innovation and Entrepreneurship Competition Excellent Award, Tamkang University, 2021.05.

**[AC1]** The Entrepreneurship Weekend Best Popularity Award, Feng chia University, 2018.12.

### Taekwondo Competitions

**[TC6]** Bronze Medal, Strawberry Cup National College Taekwondo Competition, 2021.03.

**[TC5]** Gold Medal , The 7th Zhonghua Cup National College Taekwondo Championship, 2020.11.

**[TC4]** Silver Medal, 2019 National College Taekwondo Championships, 2019.12.

**[TC3]** Silver Medal, The 6th Zhonghua Cup National College Taekwondo Championship, 2019.12.

**[TC2]** Gold Medal, The 12th Hongguang Cup National College Taekwondo Championship, 2019.03.

**[TC1]** Gold Medal, The 8th Hongguang Cup National College Taekwondo Cultural Festival, 2018.11.

## GRANTS

**[G3]** Co-Investigator, **"Image Super-Resolution and Semantic Segmentation Technology Applied to Building Crack Detection"**, National Science and Technology Council (**NSTC**), Taiwan, 2023-2025, TWD1,756,000, Led by Prof. Jen-Shiun Chiang.

**[G2]** Co-Investigator, **"Transformer Based Architecture for High-Efficiency Multi-Feature Fusion Document Semantic Segmentation System"**, National Science and Technology Council (**NSTC**), Taiwan, 2022-2023, TWD690,000, Led by Prof. Jen-Shiun Chiang.

**[G1]** Principal Investigator, **"Improved Semantic Segmentation Network"**, Research Incentive Grant, Office of Research and Development, Tamkang University (**TKU**), 2021-2022, TWD48,000.

## PROFESSIONAL SERVICES

### Journal Reviewers

**[JR12]** Cognitive Computation. **(2)**
**[JR11]** Telecommunication Systems. **(1)**
**[JR10]** International Journal of Computational Intelligence Systems. **(1)**
**[JR9]** Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization. **(1)**
**[JR8]** International Journal of Multimedia Information Retrieval. **(6)**
**[JR7]** Scientific Reports. **(2)**
**[JR6]** Plos One. **(5)**
**[JR5]** Signal, Image and Video Processing. **(5)**
**[JR4]** The Journal of Supercomputing. **(3)**
**[JR3]** Frontiers in Computer Science. **(1)**
**[JR2]** International Journal of Machine Learning and Cybernetics. **(7)**
**[JR1]** Knowledge-based Systems. **(7)**

### Conference Reviewers & Program Committee Members

**[CR3]** IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2025. **(3)**
**[CR2]** Pacific Rim International Conference on Artificial Intelligence (PRICAI), 2024 **(PC Member)**. **(5)**
**[CR1]** Pacific Rim International Conference on Artificial Intelligence (PRICAI), 2023 **(PC Member)**. **(3)**

## PROFESSIONAL MEMBERSHIPS

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|---|---|
| • Member (MIET), IET | 2024.04 – Present |
| • Student Member, IET | 2022.06 – 2023.09 |
| • Student Member, IEEE | 2022.03 – Present |

## EXTRA-CURRICULAR ACTIVITIES

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|---|---|
| • Vice Director, Tamkang Taekwondo Club | 2020.09 – 2021.06 |
| • Minister of Event Planning/Activities Department, Tamkang Taekwondo Club | 2020.01 – 2020.06 |
| • Minister of Extra-Association Affair Department, Feng Chia Taekwondo Club | 2019.01 – 2019.06 |
| • Power Forward (PF) / Center (C), Basketball Team of Department, Feng Chia University | 2018.09 – 2019.01 |
| • Power Forward (PF) / Center (C), Basketball Team of Feng Chia Mainland China Club | 2018.09 – 2019.01 |

## VOLUNTEERS

**Bali Shanti Volunteers** *Bali, Indonesia*
Teaching Program 2021.01 – 2021.02
**Volunteers for Peace Vietnam** *Ho Chi Minh, Vietnam*
Social Restaurant Program 2019.01 – 2019.01